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10. Ford ES, Ajani UA, Croft JB, et al. Explaining the decrease in U.S. deaths from coronary disease, 1980–2000. N Engl J Med 2007;356:2388–98.

Reply

We agree with the first 2 assertions made by Drs. Lampert and Myerburg regarding our paper (1). First, cost projections in our paper reflect on the entire screening process, not just electrocardiography (ECG) screening. Second, "prices" rather than "costs" were presented and we alluded to that distinction in our paper (1). Our model presents not only the "number needed to screen," but also the partition of secondary tests (mainly driven by an abnormal ECG) that are necessary to save 1 life. One may enter any price deemed "appropriate" and calculate a new cost per life saved. Obviously, all these cost projections assume that the data reported in Italy by Corrado et al. (2) are not only correct, but are also applicable to other societies.

We used cost per life saved rather than "costs per life-year saved" (1). However, assuming that all athletes with hypertrophic cardiomyopathy will have a normal lifespan if only identified through screening but would die otherwise is unsubstantiated. It is also incorrect to use Wheeler et al.'s cost-effectiveness analysis (3) as a standard for comparison. Wheeler et al. (3) also based their calculations on the Italian study by Corrado et al. (2) and credited the number of lives saved to ECG screening but dramatically reduced cost calculations by ignoring that ECG screening was repeated 20 times during the study period.

Lampert and Myerburg argue that ECG screening programs performed less frequently "have also saved lives," citing a study by Tanaka et al. (4). However, Tanaka et al. (4) never demonstrated that athletes' lives are actually saved by ECG screening. Instead, they reported the incidence of sudden death among >37,000 high school students undergoing ECG screening at 3-year intervals: 3 boys died suddenly during follow-up, representing a sudden-death rate of 1.32 in 100,000/year. Importantly, 2 of the 3 calamities had a normal ECG and were actually missed by screening. The third fatality was disqualified from competitive sports because of hypertrophic cardiomyopathy, only to die suddenly, years later, while jogging on his own. The latter case in point is a poignant reminder that disqualification of afflicted athletes from organized sports will not always translate into normal longevity. True, 8 additional students were identified as high-risk individuals (6 of them were not athletes). It is appropriate to conclude from the Tanaka et al. study that systematic ECG screening of high-school students may identify high-risk characteristics in ~1:4,200 adolescents (9 in 37,807). However, counting all identified high-risk individuals as "lives saved" would be grossly erroneous.

We never advocated abandoning screening but we do object to the concept of *mandatory* ECG screening of athletes because the benefit of ECG-screening for the prevention of sudden death in athletes remains unproven. Proponents of ECG screening must accept that the level of evidence supporting such a strategy has not reached the stage that justifies making this test mandatory. We simply do not know enough about the natural history of many conditions identified by screening to provide an accurate estimation of risk. We should not compel athletes to undergo unsolicited tests when all too often we do not know what to do with the results (5).

***Sami Viskin, MD**
Amir Halkin, MD
Arie Steinvil, MD
Raphael Rosso, MD

*Department of Cardiology
Tel Aviv Medical Center
Weizman 6
Tel Aviv 64239
Israel
E-mail: samiviskin@gmail.com

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REFERENCES

1. Halkin A, Steinvil A, Rosso R, Adler A, Rozovski U, Viskin S. Preventing sudden death of athletes with electrocardiographic screening: what is the absolute benefit and how much will it cost? J Am Coll Cardiol 2012;60:2271–6.
2. Corrado D, Basso C, Pavei A, Michieli P, Schiavon M, Thiene G. Trends in sudden cardiovascular death in young competitive athletes after implementation of a preparticipation screening program. JAMA 2006;296:1593–601.
3. Wheeler MT, Heidenreich PA, Froelicher VF, Hlatky MA, Ashley EA. Cost-effectiveness of preparticipation screening for prevention of sudden cardiac death in young athletes. Ann Intern Med 2010;152:276–86.
4. Tanaka Y, Yoshinaga M, Anan R, et al. Usefulness and cost effectiveness of cardiovascular screening of young adolescents. Med Sci Sports Exerc 2006;38:2–6.
5. Viskin S. Antagonist: routine screening of all athletes prior to participation in competitive sports should be mandatory to prevent sudden cardiac death. Heart Rhythm 2007;4:525–8.